WHAT IS CLAIMED IS:

1. A probe needle for testing semiconductor chips, the probe needle comprising:

an elongated member; and

a contact tip attached at one end of the elongated member, wherein at least a portion of the surface of the contact tip is provided with a coating of a chemically inert, electrically conductive material that is hard relative to the material of surfaces of the semiconductor chips to be contacted.

2. The probe needle according to claim 1 wherein the elongated member includes a fixed end and a free end and wherein the contact member is attached at the free end.

3. The probe needle according to claim 1 wherein the entire surface of the contact tip is provided with the coating.

4. The probe needle according to claim 3 wherein the entire surface of the probe needle is provided with the coating.

5. The probe needle according to claim 1 wherein the coating comprises titanium nitride.

6. The probe needle according to claim 5 and further comprising an adhesive layer of titanium arranged beneath the titanium nitride layer so that the adhesive layer is between the surface of the contact tip and the titanium nitride layer.

7. A method for manufacturing a probe needle for testing semiconductor chips, the method comprising:

providing a probe needle that includes a contact tip; and

coating the probe needle at least in the area of the contact tip with a chemically inert, electrically conductive material that is hard relative to the material of the contact surfaces of the semiconductor chips to be contacted.

8. The method according to claim 7 wherein the coating the probe needle at least in the area of the contact tip comprises completely coating the probe needle.

9. The method according to claim 7 wherein the coating comprises coating with titanium nitride.

10. The method according to claim 9 and further comprising coating at least in the area of the contact tip with a titanium layer prior to the coating with titanium nitride.

11. The method according to claim 10 wherein the coating with titanium and titanium nitride takes place in situ.

12. The method according to claim 9 wherein the probe needle is coated using a physical vapor deposition (PVD) method.

13. The method according to claim 12 wherein the PVD method comprises a reactive magnetron sputtering method.

14. The method according to claim 12 wherein the coating takes place from a titanium target with the addition of the reactive gases argon and nitrogen.

15. The method according to claim 9 wherein the titanium nitride comprises titanium nitride with a stoichiometric ratio of Ti:N = 1.

16. A method of forming a semiconductor device, the method comprising:

fabricating a semiconductor wafer to include a number of circuits and a number of pads;

contacting a test probe to at least one of the pads, the test probe including a contact tip that is coated with a chemically inert, electrically conductive material that is hard relative to the at least one pad; and

performing an electrical test by applying a test signal to the semiconductor wafer through the test probe.

17. The method of claim 16 wherein the test probe includes a contact tip that is coated with titanium nitride.

18. The method of claim 17 wherein the test probe includes a contact tip that is coated with a layer of titanium and a layer of titanium nitride overlying the layer of titanium.

19. The method of claim 17 and further comprising, after performing an electrical test, packaging the semiconductor device.

20. The method of claim 16 wherein the step of contacting a test probe is performed on an individual semiconductor chip.